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(51) INT CL<sup>7</sup>

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**B8P PE1X**

(56) Documents Cited

**JP 110291825 A**

**US 5505358 A**

(58) Field of Search

UK CL (Edition S) **B7B BLB, B7J, B8P PE1A PE1X**

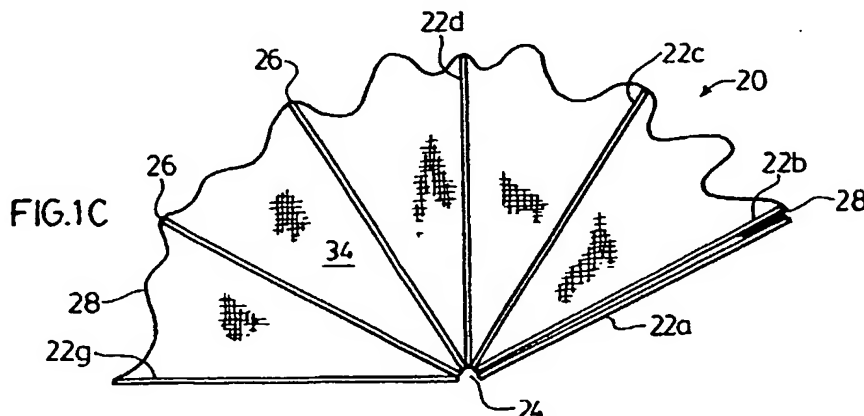
INT CL<sup>7</sup> **B60R 7/02 7/04**

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(54) Abstract Title

**Multi-compartment structure for a vehicle**

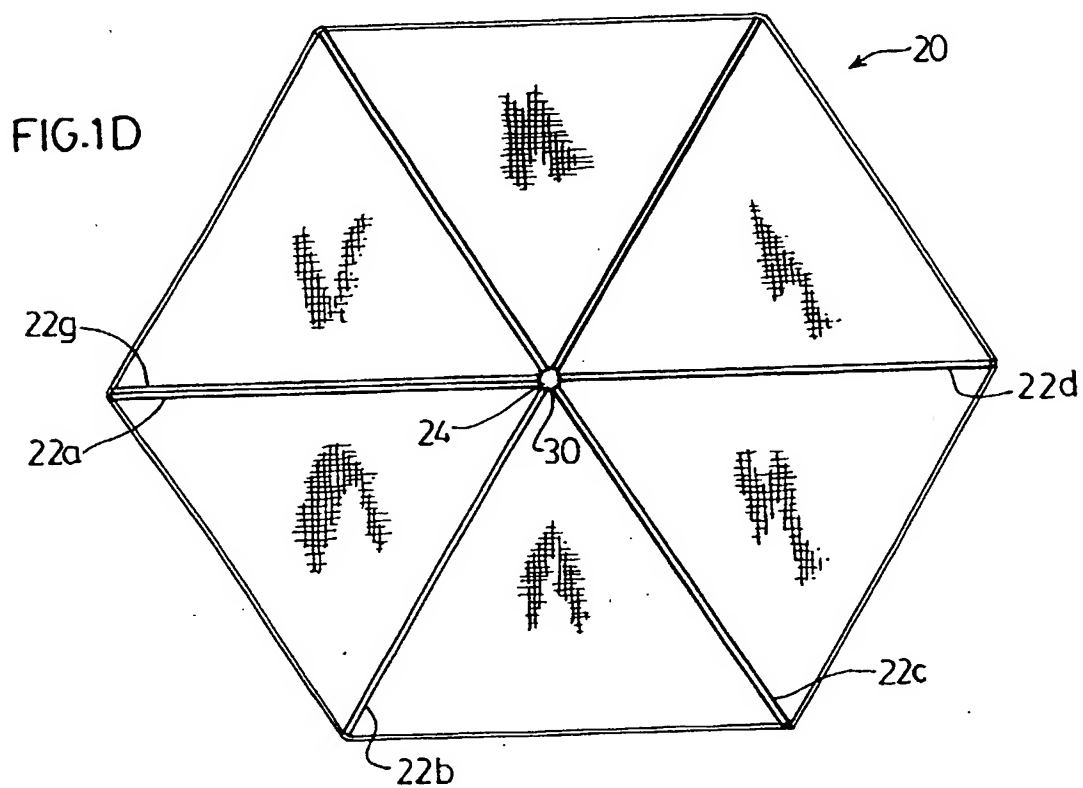
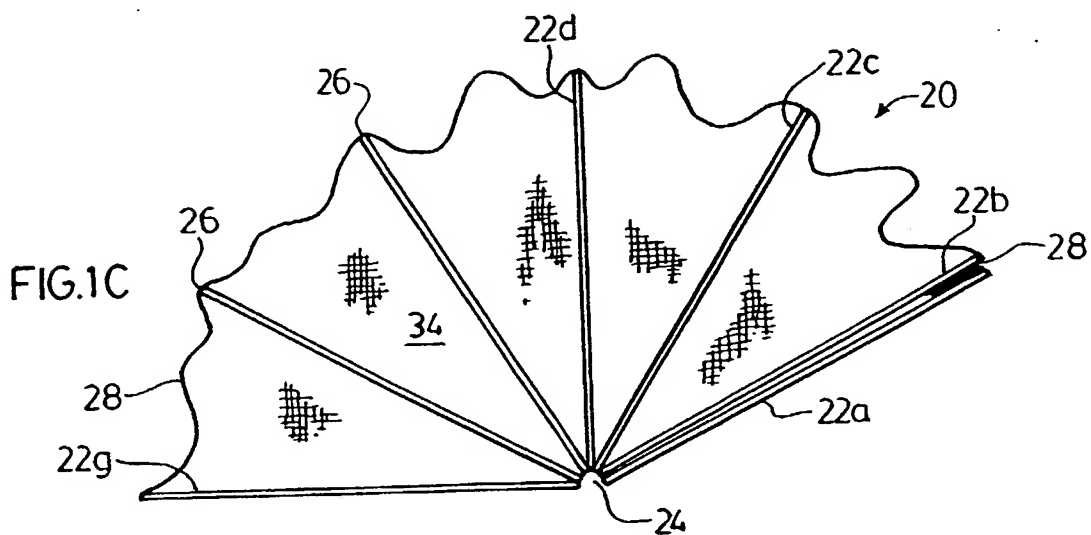
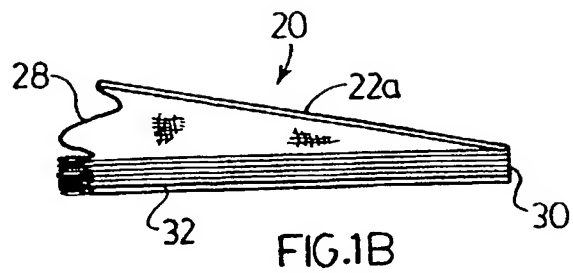
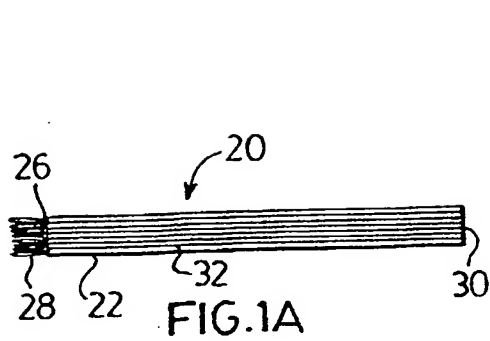
(57) A multi-compartment structure (20) for storing goods in a vehicle comprises a plurality of rigid dividers (22) hingedly attached at a central axis (24) and having outer edges (26) radially spaced from the axis (24). Adjacent dividers (22) are joined together by a wall web (28). The dividers (22) are movable between a collapsed position in which the outer edges (26) of the dividers (22) are adjacent each other and an assembled position in which the outer edges (26) are spaced from each other.



At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

This print takes account of replacement documents submitted after the date of filing to enable the application to comply with the formal requirements of the Patents Rules 1995

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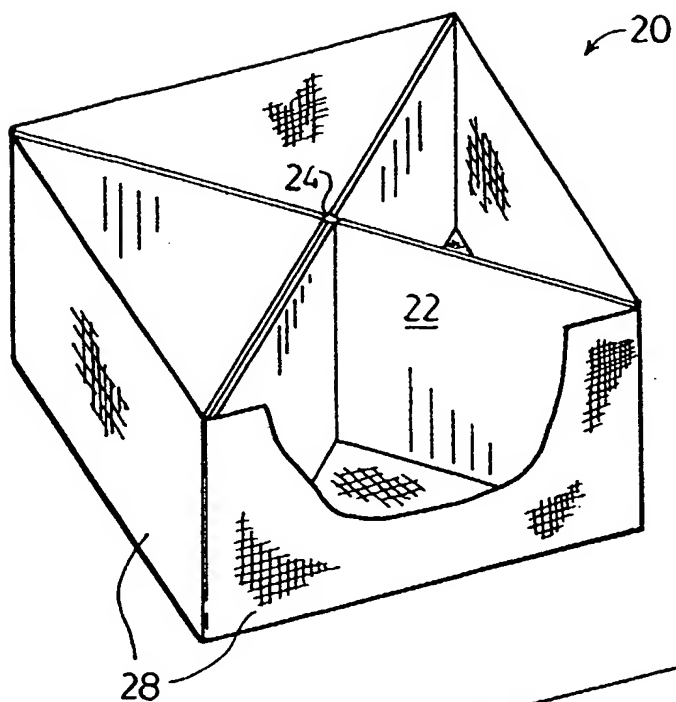
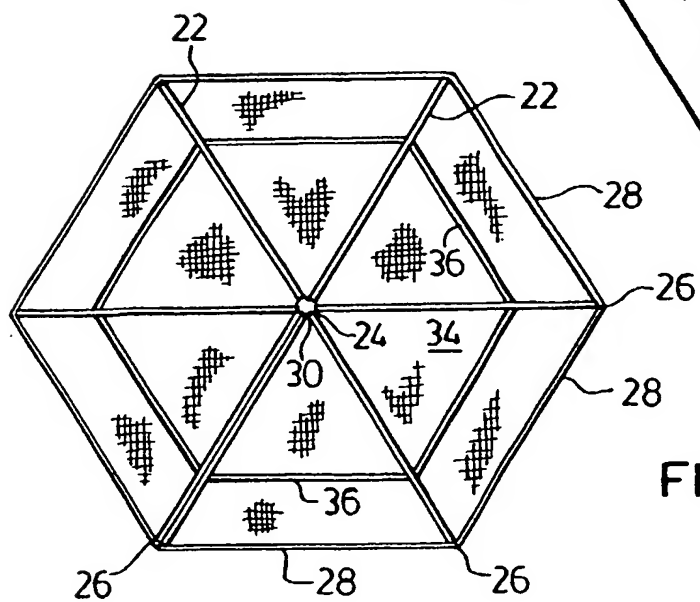
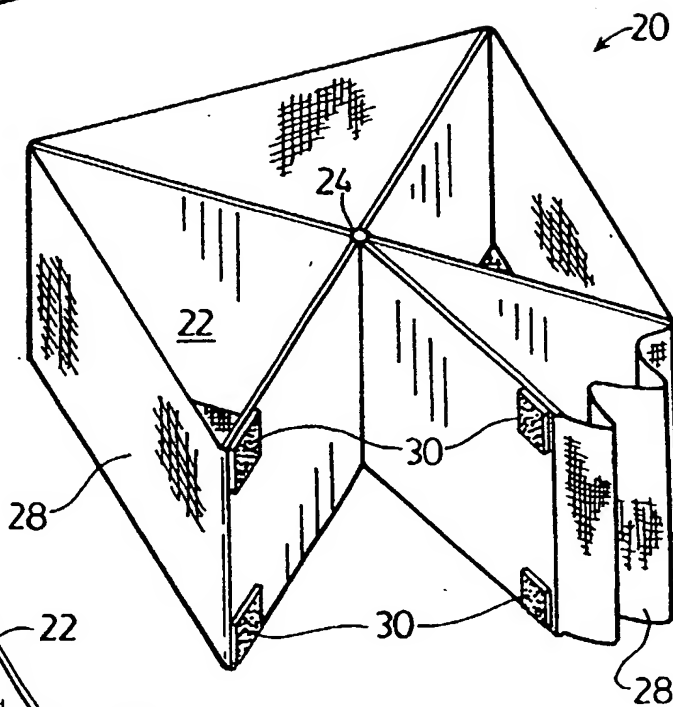


FIG. 2B



## MULTI-COMPARTMENT COLLAPSIBLE STRUCTURE

### Field of the Invention

5           The present invention relates to multi-compartment collapsible structures for use in a vehicle.

### Background of the Invention

10           Small packages such as grocery bags or fragile items such as potted plants or bottled goods can easily tip over during transportation in a vehicle. For example, grocery bags placed in the trunk of a car can easily tip over thus spilling their contents.

15           Several multi-compartment containers can be used in a vehicle for preventing goods from falling over or rolling around. Collapsible containers are particularly useful for such purposes as they can be assembled when required for transportation of small goods and collapsed when not in use.

20           One such container is disclosed in U.S. Patent No. 6,015,071 issued January 18, 2000 to Adomeit et al. This container includes a base with sidewalls that are pivotable on the base and end walls that are foldable and pivotable on the base. Dividers are provided for snapping into the base and interlocking with the sidewalls. This container, however, suffers from many disadvantages. When not in use, the  
25           container can be collapsed to the length and width of the base only and is therefore not compactly stowed away. Also, this container requires that each of the walls and dividers be raised and snappingly engaged in place. This device can be somewhat difficult and time-consuming to assemble.

30           Other prior-art devices suffer from similar disadvantages.

It is therefore desirable to provide a multi-compartment collapsible structure for use in vehicles that obviates or mitigates at least one of the disadvantages of the prior art.

5    Summary of the Invention

In accordance with one of its aspects, the invention provides a multi-compartment structure. The structure has a plurality of rigid dividers hingedly attached at a central axis and having outer edges radially spaced from the axis and a  
10   web joining adjacent dividers at a position radially spaced from the central axis. The dividers are moveable between a collapsed position, in which the outer edges of the dividers are adjacent each other and an assembled position in which the dividers are fanned about the central axis such that the outer edges of the dividers are circumferentially spaced from each other and the web spans adjacent dividers.

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It is an advantage of an aspect of the present invention that the collapsible structure can be easily assembled when required and collapsed for storage when not in use.

20   Brief Description of the Drawings

The invention will be better understood with reference to the drawings in which:

25       Figures 1a – 1d are bottom views of a multi-compartment structure according to an embodiment of the invention, showing the structure in the collapsed position in Figure 1a, in the assembled position in Figure 1d and intermediate the collapsed and assembled positions in Figures 1b and 1c;

30       Figures 2a and 2b are perspective views of a multi-compartment structure according to another embodiment of the invention, showing the structure intermediate

the collapsed and assembled positions in Figure 2a and in the assembled position in Figure 2b; and

Figure 3 is a top view of a multi-compartment structure according to another embodiment of the invention.

#### Detailed Description of The Preferred Embodiment

Reference is first made to Figures 1a – 1d which show a multi-compartment structure indicated generally by the numeral 20. The structure 20 includes a plurality of rigid dividers 22 hingedly attached at a central axis 24. Each of the dividers 22 has an outer edge 26 radially spaced from the axis 24 and a web 28, referred to herein as wall web 28, joining adjacent dividers 22 at a position radially spaced from the central axis 24. The dividers 22 are moveable between a collapsed position, shown in Figure 1a, in which the outer edges 26 of the dividers 22 are adjacent each other and an assembled position, shown in Figure 1d, in which the dividers 22 are fanned about the central axis 24 such that the outer edge 26 of each of the dividers 22 is circumferentially spaced from each other outer edge 26 and the wall web 28 spans adjacent dividers 22.

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The container shown in Figures 1a – 1d has seven rigid dividers 22. For the purpose of clarity each divider will be indicated by the numeral 22 followed by a letter designation. For example, a first divider is indicated by the numeral 22a, a second divider is indicated by the numeral 22b, a third divider 22c, up to a last divider 22g. The dividers are preferably made of plastic. Each of the dividers 22 has a central edge 30, a basal edge 32, an upper edge 33 and the above-mentioned outer edge 26. Each of the dividers 22 is hingedly attached at its central edge 30 by a fabric tape, similar to a binding of a hardcover book. Thus the central edge 30 of each of the dividers 22 is hinged about the central axis 24 and each of the dividers 22 is rotatable about the central axis 24.

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The wall web 28 is a continuous length of fabric of width approximately equal to the length of each outer edge 26 and is attached to each of the dividers 22 as will be explained further below. The wall web 28 is of suitable length to span the distance between each of the dividers 22 and form an outer wall of each of the compartments when the structure 20 is in the assembled position, as shown in Figure 1d. When the structure 20 is in the collapsed position, the wall web 28 is folded, as shown in Figure 1a.

Each of the dividers 22 is attached to the wall web 28 by a first cord stitched around an upper periphery of the wall web. Access to the first cord is gained by cutting away an upper portion of the wall web 28 at each point that one of the dividers 22 meets the wall web 28. Each of the dividers includes a cut in the upper edge 33 and a small offset hole forming a slot. The slot is of a size and shape suitable for capturing the cord. Thus the cord is inserted into the cut and is captured in the offset hole. Clearly, each of the dividers 22 are attached to the wall web 28 as they are captured in respective cut away portions.

The basal edge 32 of each of the dividers 22 is attached to a base web 34 and to the wall web 28, as is explained in detail below. In the present embodiment, the base web 34 is generally hexagonal, centered about the central axis 24 and of suitable size to form a base for the structure 20 when in the assembled position. A non-elastic cord is stitched along an outer perimeter of the base web 34 and to the wall web 28. Access to the non-elastic cord is allowed by cutting away a portion of the base web 34 and wall web 28 at each point that one of the dividers 22 meets the base web perimeter. The basal edge 32 of each of the dividers 22 includes a cut with a small offset hole forming a slot of a size and shape suitable for capturing the cord. Thus the cord is inserted into the slot and is captured therein. Clearly, each of the dividers 22 is fixed in the cut away portion of the base web 34 and the wall web 28. Further, the wall web 28 spans and thereby joins adjacent dividers 22.

The base web 34 is also stitched to the basal edge 32 of the first and last dividers 22a, 22g, respectively, at a point proximal to the central edge 30. Similar to

the wall web 28, the base web 34 is folded when the structure 20 is in the collapsed position.

In the collapsed position, the dividers 22 are stacked such that the first and last  
5 dividers 22a, 22g, respectively, sandwich the remainder of the dividers 22b-22f, as  
best shown in Figure 1a.

To move the structure 20 from the collapsed position to the assembled  
position, the first divider 22a is rotated about the central axis 24 while the last divider  
10 22g is held stationary. When the wall web 28 between the first divider 22a and  
second divider 22b is extended, the second divider 22b rotates about the central axis  
24. Rotation of the first divider 22a about the central axis 24 continues until the first  
divider 22a meets the last divider 22g and the structure is assembled, as shown in  
Figure 1d. Thus, all of the dividers 22 are fanned about the central axis 24 and the  
15 outer edge 26 of each divider is circumferentially spaced from each other outer edge  
26. Complementary hook and loop fasteners (not shown) releasably attach the first  
and last dividers 22a, 22g, respectively, together. In this position, the structure 20  
includes 6 compartments and is ready to receive items to be stored therein.

20 From the assembled position, the structure 20 is collapsed by pulling the first  
divider 22a from the last divider 22g, thus releasing the hook and loop fasteners. The  
first divider 22a is then rotated about the central axis 24, opposite the direction of  
rotation for assembly, until the first and last dividers 22a and 22g sandwich the  
remainder of the dividers 22(b-f) such that the outer edges 26 are adjacent each other.  
25 In the collapsed position, the structure is stored until required for use.

Figures 2a – 2c show another embodiment of the invention, having five  
dividers 22 which, in the assembled state, are held together by hook and loop fasteners  
33. It will now be apparent that when assembled, this embodiment forms a  
30 rectangular structure with four compartments and therefore has a rectangular base  
web.



Figure 3 shows a top view of another embodiment of the invention, having seven dividers. In the present embodiment, the structure 20 includes a first wall web 28, similar to the wall web 28 of the first embodiment, and a second wall web 36. Unlike the first wall web 28, the second wall web 36 is a discontinuous fabric, comprised of six individual portions. The second wall web 36 is attached to each of the dividers 22 in a similar manner as the first wall web 28. The six portions of the second wall web 36 share a first cord that is stitched along an upper edge of each portion and a second cord stitched along a lower edge of each portion. Each of the dividers 22 captures the first cord in an appropriately sized and shaped slot in an upper edge 33. Similarly, each of the dividers 22 captures the second cord in another appropriately sized and shaped slot in a basal edge 32. Each of the dividers 22 are thereby captured between the portions of the second wall web 36 and the second wall web forms an interior wall. Thus, the second wall web 36 joins adjacent dividers at a position that is radially spaced from both the central axis 24 and the first wall web 28. The second wall web 36 has a width equal to that of each of the dividers 22 and a length suitable to span the distance between each of the dividers 22. In the assembled position, the base web 34 is hexagonally shaped and the structure includes 12 compartments.

While the embodiments described herein are directed to particular implementations of the present invention, it will be apparent that variations to this embodiment are within the scope of the present invention. For example, the size and shape of many of the parts can vary while still performing the same function. The dividers 22 can be made of any suitable material such as vinyl or cardboard. Similarly the wall web 28, base web 34 and second wall web 36 can be made of any suitable material such as fabric, netting, or elastomeric material. Also, while hook and loop fasteners were employed in the above-described embodiments, other suitable fastening means will occur to those of skill in the art. The method of attachment of the wall web 28 and the base web 34 to the dividers 22 can vary while still performing the same function. It will also be apparent that other numbers of dividers can be used and the base web is sized and shaped accordingly.

17. The multi-compartment structure according to claim 11, wherein said plurality of dividers comprises 5 dividers.

18. The multi-compartment structure according to claim 11, wherein said plurality of  
5 dividers comprises 7 dividers.

19. The multi-compartment structure according to claim 3, wherein said first and last dividers are releasably engageable by a hook and loop fastener.



INVESTOR IN PEOPLE

Application No: GB 0110407.4  
Claims searched: 1 - 19

Examiner: Peter Macey  
Date of search: 21 September 2001

## Patents Act 1977 Search Report under Section 17

### Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.S): B7J, B7B (BLB), B8P (PEIA, PEIX)

Int Cl (Ed.7): B60R 7/02, 7/04

Other: Online: WPI, EPODOC, JAPIO

### Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	US 5505358 (HAASE) see particularly figure 5	1, 4, 5, 16, 17
X	JP 11-291825 (KASAI) see figure 1	1, 4 - 7, 16 - 18
A	GB 2292548 A (TAYLOR) see figure 1	-

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

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